PUMPS AND PUMPING SYSTEMS OPERATION & REPAIR

COURSE MODULES

1. Pumps

Positive Displacement Pumps Centrifugal Pumps Nomenclature Exercise 1: Pump Disassembly

2. Electrical Review

Terminology Safety Meters Exercise 2: Meter Reading Examples

3. Motors and Troubleshooting

Electric Motors
Exercise 3: Motor Check

4. Motors and Controls

Control Types
Control Components
Power & Control Circuits
Exercise 6: Single Phase Control Examination

Exercise 7: Panel Examination

5. Hydraulics

Terminology
Pumping System Description
Pumping Conditions
Exercise 4: Pumping System Simulations, Pump Curve
Pump Curves
Impellers

6. Pump Troubleshooting

Typical Problems Logic of Troubleshooting Exercise 5: Pump Problems Demonstrations

7. Pumping System Troubleshooting

Maintenance Records
Techniques
Exercise 8: Pumping System Troubleshooting
Electrical Problems
Pump Problems
Piping Problems

SCHEDULE

Day 1

| 8:00 - 9:00 | Introduction & Operator Discussion |
|-----------------------------|---|
| 9:00 -10:30 | Centrifugal Pumps Lecture |
| 10:30 - 11:30 | Centrifugal Pump Disassembly Exercise No. 1 |
| 11:30 - 12:00 | Centrifugal Pumps Lecture Cont'd |
| 12:00 - 1:00 | Lunch |
| 1:00 - 2:00 | Electrical Review |
| 2:00 - 3:00 | Meter Reading Exercises No. 2 |
| 3:00 - 4:00 | Motors Lecture |
| 4:00 - 5:00 | Motor Troubleshooting Exercise No. 3 |
| | Day 2 |
| 8:00 - 8:30 | Safety |
| 8:30 - 10:00 | Hydraulics Lecture |
| 10.00 - 11.30 | |
| 10.00 - 11.00 | Hydraulic Simulation Exercise No. 4 |
| 11:30 - 1:00 | Lunch |
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| 11:30 - 1:00 | Lunch |
| 11:30 - 1:00 1:00 - 2:00 | Lunch Pump Troubleshooting Lecture |

Environmental Health Support Center

Day 3

| 8:00 - 9:30 | Controls Lecture |
|---------------|--|
| 9:30 - 11:00 | Electrical Panel Exercise No. 7 |
| 11:00 - 11:30 | Maintenance and Record Keeping |
| 11:30 - 1:00 | Lunch |
| 1:00 - 4:00 | Water System Troubleshooting - Instructor Generated Problem Solving Exercise No. 8 |

